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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,613	03/25/2004	Shinroku Maejima	50099-253	5019

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Washington, DC 20005-3096

EXAMINER

NGUYEN, DANG T

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/808,613

Applicant(s)

MAEJIMA ET AL.

Examiner

Dang T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4 and 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)               |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application     |
| Paper No(s)/Mail Date _____  | 6) <input checked="" type="checkbox"/> Other: <u>Search history</u> . |

***Response to Amendment***

1. This office action is in response to applicant's amendment received on 7/20/06.
2. Claims 1 – 3 and 5 have been canceled. Claims 6 – 11 stand withdrawn. Claim 4 has been amended. Claims 12 – 14 have been added. Claims 4 and 12 - 14 are pending on this application. Claim 4 is independent claim.

***Claim Objections***

3. Claim 4 objected to because of the following informalities: In claim 4, there is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 4 and 12 - 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Sharma et al., U.S. Patent No. 6,693,825 B1 – filed Jan. 23, 2003.**

**Regarding independent claim 4,** Fig. 3 of Sharma discloses a magnetic recording device having a magnetic recording element [12 or 16] and a first conductor

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[14] connected to said recording element (*element 16 connects to 14*), wherein a configuration of said magnetic layer [12 or 16] includes a straight line (*the bottom line of element 16*) situated in one of opposite sides of a hard axis [HA] (*element 12 or 16 situated in easy axis [EA] which means it opposes with hard axis*), said first conductor extends along said hard axis, and a side face of said magnetic recording element [12 or 16] and a side face of said first conductor [14] in said side are aligned to each other (see *Fig. 3 the side face of element 12 or 16 and conductor 14 are aligned to each other*).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 12 - 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al., U.S. Patent No. 6,693,825 B1 in view of Ounadjela et al., U.S. Patent No. 6,798,691 B1 - filed Jun. 28, 2002.**

**Regarding dependent claim 12,** Sharma as applied to claim 4 above disclosed every aspect of applicant's claimed invention except for a magnetic layer showing an S-shaped magnetization distribution when a strength of a magnetic field applied to said magnetic layer along said hard axis of said magnetic layer is higher than a threshold value and showing a C-shaped magnetization distribution when said strength of said magnetic field applied to said magnetic layer along said hard axis is lower than said threshold value.

Fig. 4 of Ounadjela discloses a magnetic layer showing an S-shaped [42b] magnetization distribution when a strength of a magnetic field applied to said magnetic layer (Col. 19 lines 60-64) along a hard axis of said magnetic layer is higher than a threshold value (Col. 18 line 40 – Col.19 line 17) (*Fig. 42b discloses when a strength of magnetic field applied more current IDI along a hard axis to the selected level then it transverse magnetic field in the S-shaped, inherent the magnetic layer is higher than threshold voltage then the switching state occurs*) and showing a C-shaped [40b] magnetization distribution when said strength of said magnetic field applied to said magnetic layer (Col. 19 line 45 – Col. 20 line 5) along said hard axis is lower than said threshold value (Col. 18 line 25 – Col. 20 line 5, *for disclosing if a strength of magnetic field current applied lower current or no external magnetic fields are applied along a hard axis then a magnetization in the C-state*).

Sharma and Ounadjela are common subject matter for MRAM. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the S-shaped of Ounadjela into the magnetic element of Sharma for the purpose of providing an MRAM cell having a configuration that is substantially insensitive to variation in shape, size, and the presence of defects and also providing a method, which not only reduces the current margin between individual memory cells, but also reduces the overall amount of current required during a writing procedure (Col. 3 lines 26-35).

**Regarding dependent claim 13**, Sharma as applied to claim 12 above disclosed every aspect of applicant's claimed invention except for the configuration of said magnetic layer is symmetrical with respect to an axis

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parallel to said hard axis and asymmetrical with respect to an easy axis of said magnetic layer.

Fig. 4 of Ounadjela discloses wherein a configuration of said magnetic layer is symmetrical with respect to an axis parallel to said hard axis (Col. 24 lines 1-3) and asymmetrical with respect to an easy axis of said magnetic layer (Col. 13 lines 1-20).

Sharma and Ounadjela are common subject matter for MRAM. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the configuration of the magnetic layer of Ounadjela into the magnetic element of Sharma. Since Ounadjela taught the benefit by pointing out that the use of symmetrically shaped memory cells is likely to produce at least some variation in the switching fields associated with the individual cells in a memory array and the asymmetrical memory cell would avoid large discontinuities of local magnetic vectors at the edges of the memory cell by including smoothly curved edges (Col. 11 lines 55-57 and Col. 12 lines 4-7).

**Regarding dependent claim 14**, Sharma as applied to claim 12 above disclosed every aspect of applicant's claimed invention except for the configuration of said magnetic layer includes a rounded corner.

Figs. 3, 4 and 12 of Ounadjela disclose the configuration of said magnetic layer includes a rounded corner (Col. 23 lines 17-31).

Sharma and Ounadjela are common subject matter for MRAM. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate Ounadjela's rounded corner into Sharma's

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magnetic element for the purpose of providing an MRAM cell having a configuration that is substantially insensitive to variations in shape, size, and the presence of defects.

### ***Response to Arguments***

6. Applicant's arguments filed on 7/20/06 with respect to claim 4 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

8. Any inquiry concerning this communication from the examiner should be directed to Dang Nguyen, who can be reached by telephone at (571) 272-1955. Normal contact times are M-F, 8:00 AM - 4:30 PM.

Upon an unsuccessful attempt to contact the examiner, the examiner's supervisor, Richard Elms, may be reached at (571) 272-1869.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is (703) 305-3900. The faxed phone number for organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the Status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or [EBC@uspto.gov](mailto:EBC@uspto.gov).

Dang Nguyen 9/17/2006



**ANH PHUNG  
PRIMARY EXAMINER**